

Claims

What is claimed is:

Sub Q4 1. An assembly comprising a package and at least one outlet wherein, in use, an inner space of the package is filled with a fluid to be dispensed, wherein in the inner space of the package there prevails a pressure for enabling dispensing the fluid via the outlet, the assembly further comprising a pressure control device connected to the outlet adjacent the outlet, for feeding the fluid to the outlet via the pressure control device at a predetermined constant pressure which is independent of, and less than, the pressure prevailing in the inner space of the package, the pressure control device comprising a housing provided with an inflow opening, an outflow opening and a fluid flow path extending in the housing between the inflow opening and the outflow opening, the inflow opening being in fluid connection with the inner space of the package and the outflow opening being in fluid connection with the outlet, and the pressure control device further comprising a controllable seal for releasing and closing the fluid flow path and a pressure sensor element accommodated in the housing for movement between a first and a second position, the pressure sensor element in the first position controlling the controllable seal to release the fluid path and in the second position controlling the controllable seal to close off the fluid path, the pressure sensor element on the one hand being exposed to the pressure prevailing in the fluid path downstream of the controllable seal, and on the other being exposed to a predetermined force which, in use, determines the predetermined pressure, wherein, in use, the pressure sensor element moves in the direction of the first position when the pressure prevailing in the fluid flow path downstream of the seal drops below the predetermined pressure determined by the predetermined force and the pressure sensor element moves in the direction of the second position when the pressure prevailing in the fluid flow path downstream of the seal rises above the predetermined pressure determined by the predetermined force, wherein the pressure control device comprises a gas tight chamber, the pressure sensor element comprising a movable wall accommodated in the chamber for movement in an axial direction of the chamber between the first and the second position, the space enclosed by the movable

wall and the chamber being filled with a gas for generating said predetermined force and the movable wall being movable between the first and the second position in a direction parallel to the direction of the fluid path at the controllable seal, wherein:

the movable wall is formed by a plunger accommodated in the chamber for movement  
5 in the axial direction of the chamber between the first and second position,

the plunger and the controllable seal are movable between the first and the second position in a direction parallel to a direction from the inflow opening to the outflow opening, and

the pressure control device is located in the proximity of the outlet.

2. An assembly according to claim 1, wherein the inflow opening of the pressure control device is connected to a diptube, so that the pressure control device is accommodated between the outlet and the diptube.

3. An assembly according to claim 1, wherein the outlet is located on a top side of the package.  
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4. An assembly according to claim 1, wherein the pressure control device is accommodated in the inner space of the package.  
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5. An assembly according to claim 1, wherein the pressure control device is provided outside the package.

6. An assembly according to claim 1, wherein the gas tight chamber is  
25 manufactured from a metal.

7. An assembly according to claim 1, wherein at the outside of the package, the outlet comprises a shut-off valve for opening and closing the outlet.

8. An assembly according to claim 1, wherein the outlet is mounted adjacent the outflow opening on the housing of the pressure control device.

5 9. An assembly according to claim 1, wherein the outlet is located on top of the pressure control device.

10. An assembly according to claim 1, wherein the pressure control device comprises a spring for generating a part of said predetermined force, the spring being accommodated in the space enclosed by the plunger and the chamber, wherein the spring presses the plunger in the direction of the first position.

11. An assembly according to claim 1, wherein the pressure control device comprises at least one sealing element and the controllable seal comprises a bar-shaped element, connected to the plunger, the sealing element extending around the bar-shaped element and being connected to a housing of the pressure control device, the fluid flow path extending through the sealing element, the sealing element and the bar-shaped element in the first position releasing the fluid flow path, and the sealing element and the bar-shaped element in the second position closing the fluid flow path.

12. An assembly according to claim 11, wherein, the bar-shaped element is movable between the first and second position in a direction which is parallel to the direction of the fluid path along the bar-shaped element.

13. An assembly according to claim 1, wherein the package comprises one of an aerosol can and a bag-in-box.

14. An assembly according to claim 1, wherein the fluid consists of a gas or liquid which may or may not be viscous.

15. An assembly according to claim 1, wherein, in use, the inner space of the package is also filled with an inert gas for obtaining the pressure in the inner space of the package.

5 16. An assembly according to claim 15, wherein the gas pressure in the inner space is greater than an atmospheric pressure.

17. An assembly according to claim 1, wherein the controllable seal is movable in a direction parallel to the fluid path at the controllable seal.

18. An assembly according to claim 1, wherein a sealing element is provided between the plunger and an inner wall of the chamber.

19. An assembly according to claim 18, wherein the sealing element is attached to the plunger so that the sealing element is movable relative the chamber.

20. A pressure control device comprising:  
a housing provided with an inflow opening, an outflow opening and a fluid flow path extending in the housing between the inflow opening and the outflow opening;  
20 a controllable seal for releasing and closing the fluid flow path; and  
a pressure sensor element accommodated in the housing for movement between a first and a second position, the pressure sensor element in the first position controlling the controllable seal to release the fluid path and in the second position controlling the controllable seal to close off the fluid path, the pressure sensor element on the one hand being  
25 exposed to the pressure prevailing in the fluid path downstream of the controllable seal, and on the other being exposed to a predetermined force which determines the predetermined pressure, wherein the pressure sensor element moves in the direction of the first position when the pressure prevailing in the fluid flow path downstream of the seal drops below the predetermined pressure determined by the predetermined force and the pressure sensor  
30 element moves in the direction of the second position when the pressure prevailing in the

fluid flow path downstream of the seal rises above the predetermined pressure determined by the predetermined force, wherein the pressure control device comprises a gas tight chamber, the pressure sensor element comprising a movable wall accommodated in the chamber for movement in an axial direction of the chamber between the first and the second position, the space enclosed by the movable wall and the chamber being filled with a gas for generating said predetermined force and the movable wall being movable between the first and the second position in a direction parallel to the direction of the fluid path at the controllable seal, wherein:

the movable wall is formed by a plunger accommodated in the chamber for movement in the axial direction of the chamber between the first and second position, and

the plunger and the controllable seal are movable between the first and the second position in a direction parallel to a direction from the inflow opening to the outflow opening.

21. A pressure control device arranged for use in the assembly according to claim

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